GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . , Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST-OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, MARCH 31, 1897.

TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLE:—Garden Design 121
The Ideal Grape . . . . . *T. V. Munson.* 122
The Cypress-tree of Tule. (With figure.) 123
The Flower Industries of Southern France and Paris . . . . . *Edward Conner.* 123
FOREIGN CORRESPONDENCE:—London Letter . . . . . *W. Watson.* 124
PLANT NOTES . . . . . *J. N. Gerard.* 126
CULTURAL DEPARTMENT:—Erythroniums . . . . . *J. N. Gerard.* 126
Fancy-leaved Caladiums . . . . . *G. W. Oliver.* 126
Nelumbiums and Hardy Nymphæas . . . . . *W. Tricker.* 127
Soils and Potting . . . . . *T. D. Hatfield.* 127
Azalea Indica . . . . . *William Scott.* 128
CORRESPONDENCE:—Is the White Pine Doomed? . . . . . *B. E. Fernow.* 128
The New Forest Reserves . . . . . *H. T. Elwes* 129
EXHIBITIONS:—Spring Flower Show in Boston 129
NOTES 130
ILLUSTRATION:—The Cypress-tree of Tule, Fig. 15 125

Garden Design.

LAST November Mr. Inigo Thomas delivered one of his periodical addresses on Garden Art before a London society of architects, and it has been published in successive numbers of *The American Architect and Building News*. This lecture, like the one he delivered a year ago, and which was also republished in this country, is interesting, and to a certain extent instructive, although it contains nothing which had not been said in *The Formal Garden in England*, a book written by Mr. Thomas in collaboration with another young architect, Mr. Reginald R. Blomfield, some half-dozen years ago. Mr. Thomas describes with sympathy some of the old gardens of Italy, of Scotland and of England, and almost induces the reader to share with him a little of the enthusiasm which he thinks he feels over Yews pleached into cubes and obelisks, geometrical designs in Box and compartment gardens. We cannot but agree with him that there was design of these old places, and that even in northern latitudes and in modern days it might be possible, under certain conditions, to connect a garden of this sort with certain kinds of architecture that would be satisfying from many points of view. But Mr. Thomas does not rest here. He continues to deny that there can be anything like art in gardens of any other kind. He theorizes upon the assertion, so often made, that in the very nature of things such an art as landscape-gardening is impossible, and that formal gardens alone show anything like design. This means that one can have a certain narrow architectural training and skill and yet possess no sympathetic appreciation of charming scenery and no feeling for natural beauty. Painters of landscape know that there can be beauty of composition in trees and shrubs and grass naturally arranged, and few people have their sense of beauty so deadened by technical study that they do not enjoy this beauty as it appears in nature. Whenever a planter so models his grounds and so arranges the elements of verdure he employs as to give to the beholder the impression of a beautiful natural group, there can be no question but that he has created a work of art.

The fact is that there is more than one kind of a garden and that gardens are made to fulfill many different purposes. It is not logical, therefore, to hold that because one kind may be good for a certain restricted use all the other kinds are essentially bad. Of course, there are bad gardens of all kinds, and the most sturdy reactionist would hardly claim that all formal or architectural gardens are good, and we have, therefore, tried to learn what are the essentials of a good garden according to Mr. Thomas. He asserts that he is advocating principles, and the most complete statement of them is found in a passage where he insists primarily on "an enclosure, decided and uncompromising, not of sunk fences or iron palings, but of good honest masonry high enough to cast broad shadows early and late and keep the wind from the flowers and fruit-trees; then subdivisions either by subsidiary walls or hedges of Yew or Box, almost as dense as the masonry itself; then that the proportioning of the surface of the ground has much the same treatment that the designer deals out to the façade of a building." Now, there are many places and many climates where a garden treated on this plan by a genuine artist could be made a most appropriate and attractive addition to a house, but every reader can recall some country place without its high and uncompromising wall which has the same sense of shelter and seclusion by its position and distance from the roadway and its background of foliage, and perhaps its protection of a belt of shrubbery dense enough to serve as a hedge. We know many charming places in America that would be disfigured by a high-walled enclosure with subdivisions as dense as a wall. And yet we should like to see some artist of real creative ability attempt a garden of this kind in connection with a house of some pretensions in America. Formal gardening as it is known here means little more than ribbon lines, or geometrical flower-beds and a straight hedge or two, and it would be an education in garden-art to see an American realization of Mr. Thomas's ideal. We have few opportunities here to see high garden walls such as Mr. Thomas commends. These walls have a genuine use in England, for against them fruit-trees and vines are trained to catch the warmth of the scanty sunshine. We do not train our Pear-trees or Peach-trees on espaliers in this country, and perhaps in our bright sunshine the walls would look hard and staring. Since art is the decoration of a service and never runs counter to common-sense principles or every-day usefulness, it may well be that each country and climate should develop a style of gardening distinctly its own, and we probably should make quite as serious a mistake in adopting the design of a garden which would be beautiful and useful in England as we did in the beginning of the century in using so many of the trees and shrubs which flourish in England, and in not availing ourselves of the treasures of our woods.

But what we set out primarily to notice was an error into which Mr. Thomas falls at the beginning of his address, and which ought not to go uncorrected. His model garden is one of symmetrical spaces whose design bears a decided relation to the architecture of the house. Indeed, he asserts that nothing else is a real garden and that what has passed under that name for nearly a century would have been called a wilderness in better days. But he adds —and here is the error—that the leading purpose and chief interest of planters who use the natural arrangement is to have a "growth of rare shrubs and plants." This is fundamentally false and it shows how superficial Mr. Thomas's information is in regard to landscape-art. The real master of garden-art is not a mere horticulturist nor one who aims to gather a collection of rarities and have a museum of living plants. There are, it is true, enthusiasts who take pride in showing visitors the latest Cypripedium or a new Birch from Manchuria that no one else has grown. This passion, however, can exist without the slightest taste in the arrangement of plants or the slightest feeling for the poetical charm of a landscape. To the real master of the natural style of landscape-art the individual plant is only an element in a picture, and it is always subordinate to the

total impression. It is the greatest artist who can produce the most impressive pictures with the commonest material —ordinary shrubs and trees and grass. Indeed, so-called specimen plants have a larger and a more important place in the architectural or formal garden than in the best work of those who attempt to hold the mirror up to nature.

It is a pity that the advocates of formal gardens so generally misrepresent what is the fine art of gardening, for there ought to be no conflict between the so-called schools. The man who creates broad and tranquil pastoral scenery, so that it presents to the imagination pictures of peace, is certainly an artist. The man who in a smaller way treats a bit of ground about a house with a leading motive, so that the picture is a unit in its expression, is certainly as much of an artist as one who makes a perfect balance in the orderly arrangement of his hedges and scroll-work. The latter may be art, too, just as surely as the mingling of colors and forms in an oriental rug is art; but the formal garden addresses the æsthetic sense alone, and if there is a difference in degree it is the nobler art which appeals to something beyond the sense of beauty, and taking the materials which nature gives so groups them as to make a picture with power to stir the feelings and touch the heart.

The Ideal Grape.

ONE of the strong features of the horticultural teaching at Cornell is the seminary work, which is really a modification of the old lyceum idea. Teachers and students meet together in an informal, half-social way to discuss some topic which is previously agreed upon. The result has been the organization of a club known as the Horticulturists' Lazy Club, and it is provided with a unique and attractive club-room built especially for this use, and connected with the forcing-house. Pictures of horticulturists and botanists, fruit and flowers, diplomas and other subjects relating to the craft are hung about the walls. Here every Monday night from twenty to thirty enthusiastic students meet, Professor Bailey being among the number, and here, too, at all times of the day they find a waiting-place and a meeting-place. There is a growing library in the room, with files of the leading horticultural journals in English, French and German. At each meeting some student makes running comments on the horticultural news in the papers and books, and then the topic for the evening is taken up. This Lazy Club is so democratic that it has no officers and no rules. There is simply a register in which each participant places his name, if he desires to, at each meeting. Near at hand is a storage cellar, in which over thirty varieties of apples have been kept, to enliven the exercises all winter long, and there is always something in the forcing-houses to provoke discussion.

Aside from the stated meetings of the club, a seminary on plant-breeding has been running on Thursday nights during the winter term. The business of this seminary has been to discuss the fifteen rules in chapter iii. of Professor Bailey's *Plant-breeding*. The book was used as a text-book in the fall term, but about fifteen advanced students have discussed the questions more at large during the winter. Having finished the fifteen rules and having two meetings of the term left, the seminary took up the question of "Unattained Ideals in the Strawberry and the Grape." The Grape meeting was enriched by letters from Grape experts, one of which, by Mr. T. V. Munson, has been sent to this journal by one of the members of the seminary. The paper is so good that we publish it entire.

THE UNATTAINED IDEALS IN THE GRAPE.

When it comes to the practical point of combining all the desired characters in one variety, it is found there are conflicting elements to be worked out first. To render my meaning clear I will mention the characters desired, yet not found combined in any variety in existence, and which quite probably never can be:

1. Vigorous, healthy plant; resistant to fungous diseases and to phylloxera; hardy to withstand cold and heat north and south; long-lived; prolific; adapted to all tillable soils and aspects.

2. It should ripen a constant full yield, evenly in the cluster, here in the south from June 25th (when the very earliest known varieties begin) until November 1st, or to the time of killing frost.

3. For appearance sake it must bear a good-sized cluster, neither too loose nor too compact, with berries never below medium size (unless in wine grapes, when they may be smaller), persistent to the pedicel, with skin thin, tough, never cracking in changing weather, and in color yellowish green, lively red of various shades, and black, as these shades are always in good demand throughout the entire season.

4. The requirements as to flavor demand a skin non-astringent and non-pungent; a pulp tender, meaty or juicy, yet not "slushy," like that of a berry affected by white rot, as some varieties naturally are, rich in both sugar and acid so as to be sprightly, yet not too tart (Delaware is a little "tame"; Catawba just beneath the skin is excellent, but next the seeds too acid, while the Vinifera class is generally too much like sweetened water in flavor, and Iona at its best is perfection); flavors must be delicate, not musky like the Labruscas, however—a faint touch of this is permissible. (There are peculiar and various very agreeable fruity flavors in our native Post Oak grapes, V. Linsecomii, of Texas, Indian territory and south-west Missouri, which I consider superior to any other native grapes.) The dead, earthy taste found in the after-taste of most Labrusca varieties is to most grape connoisseurs even more objectionable than their "foxiness"; the seeds should be small, soft, few (one to three), and separating readily from the pulp. The sprightliness and flavor should remain in the grape a long time. (The Concord becomes flat here in the south in a few days after it turns black.)

Now, it is clear at once that no one variety will ever be developed to supply all the above requisites. The varieties that ripen in the heat of summer quickly pass away. Two weeks is about the length of time that the best varieties will keep their character, in July and August, although they last much longer in September and October, so that our grape season requires at least five successions of two weeks or more to cover our entire grape season.

The old standard varieties are all gone here by about the first week in August. After that for a month the Rotundifolia varieties come in. I have tried to fill in this gap and have partially succeeded in the varieties named Fern, Lanssel and Marguerite.

Each of the five ripenings should have at least one first-class red, one yellow and one black table grape, to say nothing of wine grapes, thus making at least fifteen varieties to cover the season in the south. For the north one half the number would be sufficient. By comparing the above ideal succession with the actual it will be quickly seen that the field is not occupied by a great deal either north or south, but better in the north than in the south.

If you will endeavor to fill up each square of the following diagram with an ideal grape, as outlined for it above, with nine squares, or a month and a half for the north, say, the latitude of New York, and for fifteen squares or the full season of three months, the deficiencies will at once become apparent:

	Black.	Red.	Yellow.
First ripening, 15 days, . . .	1	2	3
Second ripening, " . . .	4	5	6
Third ripening, " . . .	7	8	9
Fourth ripening, " . . .	10	11	12
Fifth ripening. " . . .	13	14	15

Grapes which are of a green color when ripe are undesirable, so are pale dull red ones such as Perkins, and varieties which ripen unevenly, as the Concord generally does in the south, are almost worthless. The Elvira is a green grape, the Pocklington a yellow grape; the first is far better in quality, but the latter will outsell it on account of color.

When all points constituting the ideal variety for each space are considered, it will be found that nearly, if not quite, all the spaces will be found empty, and this emptiness only shows the work yet to be accomplished by originators.

Let us try a few varieties and see where and how they fit. Space No. 1 will not contain Champion on account of its poor quality and its habit of dropping from the cluster, but it would go in so far as productiveness and size are concerned. Campbell's Early is now being put forward as completely filling it,

but it has not yet been given a practical test in most parts of the country. My Presly, tried in Space 2, fills the requirements fairly as to earliness and vigor, also in color of berry, but it is lacking in size both of cluster and berry, although it is as large as the Delaware; neither is it prolific enough in the weight of fruit, nor of good enough quality, yet it is considerably better than Champion.

In season, Winchell (or Green Mountain) might be applied to Space 6, and would fill it quite well, except that it is too green and too subject to black rot. Niagara might fill the same space (6), and would do fairly well in size, productiveness and vigor at the north, but it is not quite good enough (too foxy), and the skin is too tender for long shipment. And so we might go on through the list and find vast room for future work in originating better varieties and many to occupy spaces yet vacant.

The next question is, what material have we from which to create these needed varieties?

It is very certain that the Labrusca varieties alone can never fill the diagram, neither can any other one species; neither can Labrusca and Vinifera jointly, as will be apparent when you apply all the known simple and hybrid varieties of these; neither can Labrusca and Riparia, which would take in addition the Labruscas in our catalogues and all the Labrusca × Riparia hybrids, such as Clinton, Taylor, Elvira, etc.; neither Labrusca, Riparia and Vinifera.

But add the large-clustered, large-berried Vitis Linsecomii, and we go forward at once to the medium and later seasons, and fill better many of the already partially filled spaces. V. æstivalis and V. Bourquiniana join well in the work. So will V. Champini, V. Doaniana and V. rupestris, among the extra-early and mid-season varieties for the south, and finally the V. rotundifolia will come in for a share in the subtropical Gulf regions. V. Solonis in the hot south-west will take the place of the sprightly V. riparia of the moist cold north-east. No one generation of simple or hybrid varieties will do the work. It will require generation upon generation, combination upon combination.

I have found that grapes of a certain color, as of red, yellow or black, yield a great majority of their own color in their progeny, and especially so if such colors are crossed or hybridized together, as naturally would be expected; hence, in breeding for color, use only parents of that color if they possess the other desired properties. A careful study of material in hand in connection with above general considerations will lead readily to the minute study of special qualifications; such, at least, has been my experience.

The Cypress-tree of Tule.

ON page 125 of this issue is the portrait of the Cypress-tree of Santa Maria del Tule, made from a photograph, for which we are indebted to Baron Thielmann, the German Ambassador at Washington. This tree stands on the grounds of the little church in the town of Tule, on the road from Oazaca to Guatemala, by way of Tehuantepec, and is the largest of the Mexican Taxodiums, and perhaps the most famous tree in the New World. According to a note in the eleventh volume of Sargent's *Silva of North America* its trunk at five feet above the ground, according to late measurement, has, in following all its sinuosities, a circumference of 146 feet, while the actual girth is 104 feet, the greatest diameter being forty feet and the least twenty feet. Its height is estimated to be 150 feet, and the spread of its branches is 141 feet. As measured by Baron Thielmann last autumn its height was between 160 and 170 feet and its largest diameter forty-two feet. This tree is believed to be two thousand years old. It was mentioned by Humboldt, and his name is inscribed on the bark.

In the third volume of this journal the portrait of another of these wonderful Mexican Taxodiums was published on page 155. This was the Cypress of Montezuma, the largest of the great Cypress trees in the gardens of Chepultepec, near the City of Mexico, and a noted tree nearly four centuries ago. The Cypress of Montezuma is a tall and still graceful tree, 170 feet high, with a trunk to which travelers have ascribed a girth varying from forty to nearly fifty feet, these discrepancies being due, no doubt, to the different points above the surface of the ground at which they were made.

The Mexican Taxodium, although it grows to a much greater size, is specifically almost identical with the Taxodium or Bald Cypress of our southern swamps, being chiefly distinguished from that tree by its autumnal flowers and by the persistence of its leaves, which do not fall in the autumn, and, although most botanists now consider it a distinct species, it may on further investigation prove to be only a geographical form of our tree.

The Flower Industries of Southern France and Paris.

FROM December till May is the season for the flower industries. It is only within the last fifteen years that the commercial culture of flowers in France has attained its present large proportions. The area now devoted to flower-farms, where entire fields, not beds, are cropped with the most lovely and odoriferous flowers, lies in the area twenty by ten miles in extent which takes in Cannes, Nice and Grasse. The climate as well as the soil are especially suitable to the enterprise in question. Subdivisions of the area have also their peculiar floral outputs. Cannes, Nice and Antibes are reputed for their famous Roses; Grasse for its Jonquils, Violets, Tuberoses, Jasmine, Mignonette; Hyères and Fréjus, for Violets; the suburbs of Cannes, for Pinks. Bulbous plants succeed everywhere.

In the matter of profit, the districts of Antibes and Cannes rank first; excellent outputs are also secured about the Golfe de Juan and Beaulieu. The total area actually cropped with flowers is nearly 1,800 acres, of which the commune of Nice represents 500, and Cannes, Antibes, Mentone and Grasse each 250 acres. The villa residences commence to encroach on the flower lands, but the house proprietors themselves grow flowers, and that, with letting their villas, helps to make up the means of living. The very large growers of flowers resemble, it may be said, large farmers; they sell their produce to the laboratories or to contractors, or they enter into partnership with intelligent laborers and divide profits. In the winter season the culture is confined to the raising of cut and ornamental flowers. In summer the aim is to cultivate for the laboratories—that is, to distill for perfumery, to prepare essences, pomades and scented "waters"; it is also the season for harvesting seeds.

It is a popular error to suppose that no skill or outlay is required to produce the supplies of flowers for northern latitudes between Christmas and May. Flower culture exacts capital and increasing care. Doubtless many conclude that the flowers grow naturally in the open air—this is an error; some do, but the most delicate and the most beautiful species are raised under glass. In the regions of Nice, Grasse and Mentone there are 200 acres of land covered over with glass frames, each frame costing at least 7s., so that much capital is sunk in the industry. Other flowers are raised under canvas tents, and many are protected by matting. Roses and Pinks are grown under glass; while white Lilac, Lily-of-the-valley, and also Pinks are forced into bloom in the space of eighteen days. The Lilac is white, because grown in darkness, but when exposed to the sun it rapidly assumes its tints, and no fewer than 200 shades of Lilac have been recorded—a collection the late Monsieur Chevreul never could delineate. It is in the bloom and color-producing efficacy of the sun that much of the secret of flower-farming resides. Violets are generally grown beneath the shade of Orange-trees or under the shadow of walls. The Russian variety is classed first, then the Queen Victoria, which is of a deeper hue.

Flower culture could never have succeeded were it not for the railway companies facilitating the industry. They guaranteed the quickest trains from the south to the north of France, accepting the flowers packed in special osier-baskets, and limited to parcel-post weights, never exceeding eleven pounds. It is thus that Nice and other places supply London, Berlin, Stockholm, etc. None go to St. Petersburg; the parcels, even for the imperial family, are too severely handled while passing through the customs. Germany is the best customer of France for flowers. The prices of flowers depend upon the weather and fashion. Formerly Berlin gave the top prices, now all are on a level; while the cultivators have their own daily latest market quotations published the same as for corn, pork or coal. At Cannes, roses range from 2d. to 7s. per dozen; pinks, 1d. to 4s.; Orchids, 1s. 6d. to 3s.; narcissus that sell at one time at 1d. each, can at other times be had at the same price per dozen. Occasionally taste runs in favor of white, red or yellow colors. During the General Boulanger craze in France, and especially Paris, red carnations obtained

fancy prices, because the favorite flower of the then "hero of the day"; of late these flowers do not sell at all.

Flowers for transport are generally cut before sunrise; the best only are chosen, and are packed with cotton, as in the case of camellias, roses and such Orchids as do not stand the journey, or with tissue paper, or even both. Acacia or mimosa generally lines the baskets.

Flowers, as a rule, are not distilled at Grasse, etc., but the leaves, bark, seeds, roots, etc., of odoriferous plants are. The perfume in the other cases is secured by pressing the petals between layers of suet or lard; when the perfume has been absorbed the grease is dissolved in alcohol, which in turn absorbs the essence. Nice and Grasse work up yearly 800 tons of fat and 500 ot oil in the preparation of perfumery. It takes twenty-five tons of rose petals to prepare two and a half pounds of essence of roses, the latter representing £100. In 1892 the railway station at Cannes alone forwarded 900 tons of flowers, valued at £160,000. The profits of flower-farming fluctuate between eight and eighteen per cent.

France alone consumes the moiety of the total of her flower output. Paris is the great consumer; the capital needs perfumes and flowers for its fêtes, weddings and funeral ceremonies. It wishes flowers upon mantelpieces above a blazing fire—for bouquets in the eyes of French people mean gayety. A bunch of Parma violets can glide into a muff, can decorate a buttonhole, or ornament a corsage.

The wholesale market of Paris, with which the writer only deals, is held in the central cross alley of the Halles Centrales. In summer—April to September—the hours are 3 to 8 A. M.; in winter, 4 to 9. The right-hand side of the alley is reserved for the flowers from southern France, as delivered by the railway vans; the left side is allocated to the floriculturists of Paris and its suburbs, who have forcing-pits and greenhouses of their own. There are about thirty-two licensed retail sellers, who pay 4d. for their stand of as many hours. There are two sworn auctioneers, who give security each for £400; their fee is five per cent. The thousands of small baskets from Nice, etc., of four to eleven pounds weight, are sold by the dozen; if possible, the same kind of flowers are disposed of simultaneously. Then there is in the distance a regiment of hawkers, who come to buy from the auction salesmen; they have a handcart, which they hire for 6d. a day, paying 2d. more for the liberty to trundle along the streets; these are the subaltern distributers of the floral harvest.

In addition to the special "local" flower markets of Paris, there are 230 fleuristes—there were only forty-five in 1870—or flower-shops, that have magnificent contents along the leading boulevards and main thoroughfares. Their windows are often marvelous displays of floral wealth, united to art. The contents of each window constitute an object-lesson in the harmony of colors, in the arrangement of shades and of volume, of flowering plants [the taste is sometimes questionable, witness the large ribbon bows and satin streamers intermingled]. What wreaths, what bouquets, what painting of the Lily! All is the work of the special lady shop assistant, known as the coloriste; she receives £12 per month for merely dressing the window and inventing combinations for bouquets. The fleuristes in Paris are wealthy, like their customers, who command bouquets and plants varying from £4 to £20. Many of the fleuristes have their own greenhouses in the suburbs, and take by contract what is most beautiful for sale by private growers. They possess every flower "out" of season, of the very newest variety, with the freshest of bloom, and displaying the brightest colors.—*Edward Conner, in The Gardeners' Chronicle.*

Foreign Correspondence.

London Letter.

Iris Robinsoniana.—English growers of plants for furnishing purposes have been attracted by the elegance of habit and rich green foliage of this Iris, of which a figure was published in Garden and Forest, vol. iv., 352, prepared from a large specimen which flowered in a sunny greenhouse at Kew. It possesses in an exceptional degree those characters essential to a good furnishing plant, its leaves being far less stiff and better in color than the New Zealand Flax, Phormium tenax, which has been tried again and again by market-growers and has always failed to "catch on" with furnishers, owing to its stiffness. The Iris is easily grown in a greenhouse, and as it ripens seeds in abundance a stock of it can be quickly obtained, or it may be propagated by means of division, as it is very prolific of basal suckers. It will be remembered that this is the "Wedding Flower" of Lord Howe's Island, the home of the Kentias, and that it is by far the largest of all known Irises. It bears tall branching panicles of beautiful white and gold flowers.

Phædranassa chloracea.—When properly treated this is one of the most charming of bulbous plants, and a useful plant for the conservatory. It prefers a sunny greenhouse, a loamy soil, a fair allowance of water while growing and absolute dryness when at rest. The leaves, which are produced with, not after, the flowers, are like those of Eucharis candida, but longer in the petiole, and they are covered with a glaucous, almost pale blue bloom, like the bloom of the damson. The flower-scape is erect, eighteen inches high, and it bears an umbel of about a dozen drooping tubular flowers nearly two inches long with acute segments, their color being a beautiful combination of scarlet and blue-green. The plant belongs to the same category as the Urceolinas and Callipsyche. It is a native of the Peruvian Andes up to 12,000 feet. It is sometimes catalogued by the Dutch bulb dealers, but it is rarely seen in English gardens, although eminently worthy of a place in all good collections.

Dracæna angustifolia.—Some young plants of this Malayan species are now attractive in a stove at Kew by reason of their large arching branched panicles of white flowers, which are sufficiently attractive to place this species among flowering stove plants, an unusual character in the genus. The Kew plants have erect, unbranched stems eighteen inches high and a quarter of an inch thick, leafy to the base, the leaves bright green, narrow, a foot long. The panicle of flowers springs from the top of the plant and is two feet long, branched, the branches nine inches long, the whole clothed with narrow tubular flowers nearly an inch long. According to the description of this species in Hooker's *Flora of British India*, it forms a stem eight to ten feet high, as thick as a stout cane, simple or forked, the leaves sometimes twenty inches long, the panicle very large, the flowers white or tipped with pink, and the fruit half an inch in diameter, fleshy and orange-colored. It is a true Dracæna, not a Cordyline, and is a native of Australia as well as India.

Crotalaria longirostrata.—We obtained this plant from seeds sent to Kew by Mr. J. N. Rose, of the United States Department of Agriculture, in 1891. It is now one of the most useful of shrubby legumes grown in pots for the decoration of the greenhouse in winter and spring. Cuttings are struck annually in a stove and the plants are grown in a sunny frame all summer along with Poinsettias. They form shapely little shrubs about two feet high, with pinnate leaves of a soft green color, and long-stalked, erect racemes of bright yellow flowers about the size of those of the common Laburnum. Planted in a bed out-of-doors in June a batch of plants made healthy growth, but did not flower. In subtropical climates where the atmosphere is fairly dry it would probably prove a first-rate shrub for the open Of the several hundreds of Crotalarias known very few are of any value as decorative plants. C. juncea, the Sunn-Hemp, sometimes develops with us into a presentable shrub, and its golden-yellow flowers are decidedly ornamental.

Columnea Schiedeana.—This is a large-flowered, attractive stove-plant two or three feet high, with fleshy stems, lanceolate dark green leaves four inches long, and axillary clusters of stalked, tubular, two-lipped flowers three inches long and colored dull crimson and brown, the conspicuous calyx being bright red. It is easily grown, requiring similar treatment to shrubby Begonias, and it flowers freely in February and March. The genus is a near ally of Alloplectus and Drymonia, and it is said to contain about sixty species, all natives of the tropics of the New World. Only very few, however, of them have ever been introduced, and perhaps not more than three or four are in cultivation now. One of the most striking is the Colombian Columnea Kalbreyeriana, with a short stem, large leaves and clusters of bright yellow flowers. C. Schiedeana was introduced

from Mexico many years ago, and was figured in *The Botanical Magazine*, t. 4045. It is cultivated in continental gardens under the name of C. erythrophæa.

Didymocarpus Humboldtiana.—This is a tropical representative of the Pyrenean Ramondia. It is, therefore, too small to find general favor among cultivators of showy things only; nevertheless it deserves a place among choice tropical plants. It is by far the most tractable under artificial treatment of all the species of Didymocarpus that I have tried (D. Malayana, Messrs. Veitchs' recent introduction, I only know from experience with small seedlings up to the present), for it grows and keeps healthy when kept on a shelf in a warm house and treated the same as Gloxinias. It has broadly elliptic, wrinkled, hairy leaves three inches long, which lie flat on the ground, Ramondia-like, forming a tuft, from the centre of which the slender, branched peduncles rise to a height of three or four inches and bear numerous broad-tubed Gloxinia-shaped flowers nearly an inch long and colored pale purple in the type, white, with a blotch of yellow in the variety alba. It has been flowering since last autumn, and is now ripening seeds. It is a native of Ceylon. There are about seventy species known, all natives of tropical Asia.

Primula obconica rosea.—This is a considerable improvement upon the type, both in regard to the size and color of its flowers. Messrs. Ware, of Tottenham, exhibited a batch of it in flower at the last meeting of the Royal Horticultural Society, from whom it received a certificate. It has large, well-formed trusses of flowers, each an inch across and colored clear rosy pink. Along with it were well-grown examples of the type and of the variety grandiflora, the flowers of which are pale lilac, almost white in fact,

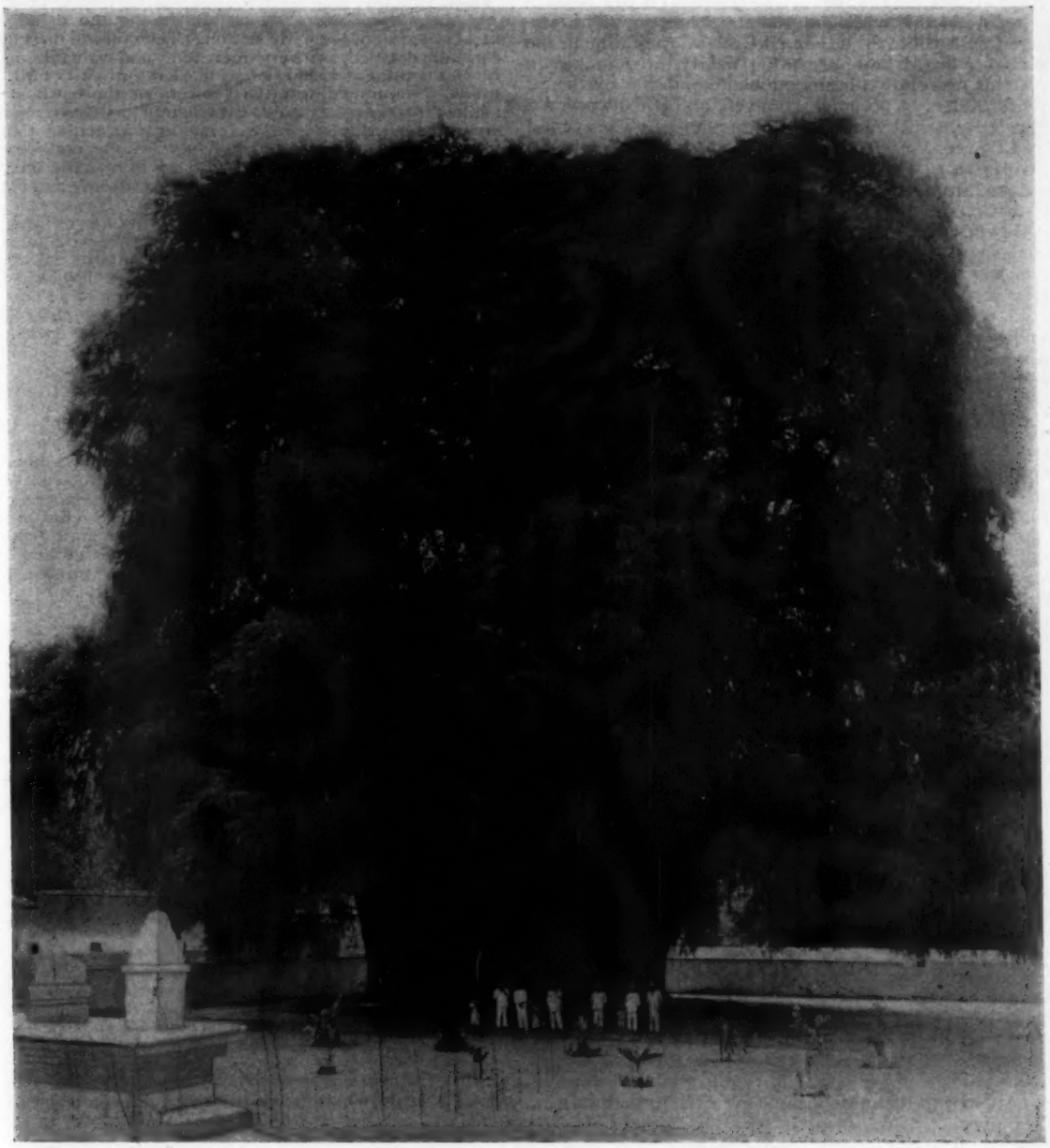

Fig. 15.—The Cypress-tree of Tule.—See page 123.

when developed in a little heat. Ever since its introduction from China in 1882 cultivators have been striving to cross this species with other good garden sorts without any definite result having ever been obtained, but it appears likely that variety, in both size and color of flowers, is being gradually evolved solely by high cultivation and selection. There is, for instance, a marked difference between the best forms of this species as now known and the type as represented in *The Botanical Magazine*, t. 6582.

Cyclamen Persicum again.—Two additional sports have been recorded this week, namely, an exceptionally large-flowered pure white form, named Grandiflorum album, the petals being broad and measuring nearly three inches in length. It was shown in magnificent condition by the St. George's Nursery Company, Hanwell, and was awarded a certificate by the Royal Horticultural Society. The second is a red-flowered variety of the sport with crested petals which originated in a garden in France three years ago, and is reproduced from seeds. It will be remembered that Messrs. Low & Co. have raised a white-flowered variety with crested petals, and this also comes true from seeds. Dr. Masters suggests that these sports are due to hypertrophy or overgrowth, caused by excessive feeding, and that they may be looked upon as a "variation formed as it were beneath our eyes, and one, moreover, which in so far resembles a species that its characteristics are reproduced from seed."

London. *W. Watson.*

Plant Notes.

Iris Rosenbachiana.—Some mild day in March, or even in late February, if genial conditions prevail, there will be seen rising from the bare earth a short cluster of leaves about the size of a finger-tip. Very shortly after, this Bokharan Iris will expand its fair, not to say gaudy, flowers, fully unrolling in a few hours after it shows color. In the early year flowers are either short-stemmed or sessile, as if they feared to trust themselves too freely to Nature's buffetings. It is only as the season advances that the leaves and peduncles expand to produce bolder effects in the garden. Even the bold Daffodils send the smallest and daintiest of the race as a courier, and Narcissus minimus, which now appears as usual, is scarcely as large as a Snowdrop. The early Irises have but small flowers and show not much foliage, and this is linear. The best forms of the Reticulata section are modest in size as well as color, I. histrioides being the most prominent for mere inches. Much more showy than any of these, though little exceeding them in size, is I. Rosenbachiana, which begins to show itself before the smaller Irises have passed. This has an ovoid bulb with short perennial (or perhaps persistent) roots very much thickened where they join the bulb. Botanically it is of the Juno section, one of the most striking of its characteristics being the very small standards, which are a perfect antithesis to the bold standards of the German Irises. The flowers have very long tubes, long narrow styles, still narrower claws and a short vividly colored fall. They are said to vary materially in coloring, from white to shades of purple. Those in my garden are light purple, shading to white, except on the falls, which are a rich reddish purple. The flower has a bright orange ridge, bordered to the base of the claw with distinct narrow lines of purple. Away from its surroundings it appears only as a pretty thing, but rising from the bare earth with no foil of foliage under the conditions prevailing in March, it is distinctly gaudy and one of the oddest productions of nature. It is a much taller flower than that of the better-known I. Persica (also of the Juno section), whose coloring is rather of a livid hue, though it always appears to one as a surprising flower. It may be added that I. Rosenbachiana usually has two, and sometimes three, flowers in succession, bears seeds in this climate, and seems fairly thrifty when planted in moderately light soil, where the bulbs are dry in summer. It has not increased in the three or four years in which it has grown and flowered here, but it has never failed to flower, and has not degenerated, as summer-resting bulbs often do. Slowness of increase is often more the fault of the gardener than the plant.

Elizabeth, N. J. *J. N. Gerard.*

Cultural Department.

Erythroniums.

Mr. Purdy, on page 106, speaks none too highly of these beautiful flowers, which are among the daintiest and most graceful of the early season. The cultural directions, so carefully detailed, are very interesting and valuable, and any further comment would seem uncalled for had not Mr. Purdy rather discouraged careless growers or those who are not inclined to take special pains with their plants. Eastern growers do not need any special warning against native California plants, which have a reputation, not wholly undeserved, of being, as a rule, rather difficult subjects to retain in the garden from the fact that they begin to grow too early and that it is difficult to give them their natural rest. However, they are mostly amenable to rational treatment, and most of them fully repay any care required. But my experience with a few bulbs each of half a dozen species of Erythroniums which I had from Mr. Purdy three or four years ago, does not bear out the doubt expressed as to their success under other conditions than those noted. My bulbs are planted in the stiffest of clay soils in a border which has had no cultivation to speak of, and certainly no manure or humus for over a decade. They are in the wettest spot in the garden, where water stands if anywhere, yet the bulbs have always flowered, and I notice that they are again showing buds. I doubt if they have increased in numbers, but this does not seem surprising under the circumstances, and I do not know that they naturally increase as fast as our local Dog-tooth Violets, which devote themselves so much to vegetative growth that one cannot in some seasons find a flower on a thousand plants. If they have the same extraordinary underground growth as our eastern Erythronium, which, by its lengthening stolons, plants new buds generously in every direction and at all depths, perhaps culture in stiff soil may act as a repression to increase of growth, but be helpful to number of flowers.

These two experiences are only an illustration of the fact that many plants have a great range of adaptability to varying conditions, and that in the garden one may have success with the same plants under widely different cultures. Gardening is very empirical, and cannot be confined to rigid rules. No garden is a true home for all plants, and no grower succeeds with all; in fact, the specialist of a few species is apt to find that as soon as "he knows it all" this is a pride which cometh before a fall, and that any plant may be as capricious as, say, the gentler sex, and more interesting in either case because capricious.

Elizabeth, N. J. *J. N. Gerard.*

Fancy-leaved Caladiums.

The tubers of these plants which are intended for the decoration of the greenhouse during summer should now be started into active growth, while those which are to be cut up to multiply any desirable sort should be selected, labeled and kept in dry sand till a little later in the season. Tubers best suited for the latter purpose are the ones which show signs of starting around the sides, while for growing into plants with large leaves in a reasonably short period, those of a fairly large size without side growths are preferred. To save space for a few weeks the tubers can be started rather closely together in shallow boxes or on benches, with finely chopped moss or rough sand as a cover; but this method, although it saves space, has its drawbacks. The tubers do not all break into growth at one time, some of them being almost in a dormant state, while others are ready to be put in pots; again, the roots are apt to get mutilated in the transfer, which causes a serious check to many of the finer kinds. I prefer to use small pots for starting the tubers, as it is a very much more satisfactory method. Three and four inch pots will be found large enough for the purpose; where three-inch is too large, then two or more small tubers of a kind may be put together.

To grow a plant successfully a great deal depends upon securing thick healthy roots at the start. These roots are produced at the top of the tuber just at the base of the growing leaf-shoot, so that the tubers should be planted deep enough to insure good rooting conditions on the top instead of at the bottom. I find the best potting material for starting tubers to

be of chopped sphagnum moss and well-decayed cow manure in equal proportions; the manure should be put through a No. 4 sieve and the moss through a No. 2. Add a liberal sprinkling of sharp sand, press this material pretty tightly around the tuber and leave a space of at least one inch below the rims of the pots; to keep them in a uniformly moist state a layer of moss can be placed between the pots when standing them on the bench. When they have grown sufficiently for their first shift, some of these high-colored, slow-growing kinds which have recently been sent out will do all the better if a similar compost is used in this operation, but care ought to be taken to have the pots sufficiently drained and the compost firmly pressed. Grown this way they need more water than when grown in soil.

Botanic Garden, Washington, D. C. *G. W. Oliver.*

Nelumbiums and Hardy Nymphæas.

THE Egyptian Lotus has gained such an established reputation in this country that every lover of aquatic plants who has any place to grow them aims to have them. Although these plants are perfectly hardy they are rather difficult to establish. This is a good time to plant hardy Nymphæas, and although Nelumbiums are also hardy they should not be treated the same. Most of the Nelumbiums are indigenous to warmer climates than the hardy Nymphæas are, and are more impatient of removal. Many failures have resulted from digging tubers and transplanting them too early in the season, and as seasons vary considerably what is applicable in one state may be fatal in another state, or even in another section of the same state. Some general conditions exist, however, in all parts of the country, but the date of these varies with the latitude. In the southern counties of New Jersey bordering on the Atlantic and on Delaware Bay vegetation is three to four weeks earlier than in the northern part of the state. A similar difference exists in other states, so that the precise time for planting must be judged locally. But it may be considered safe to plant Nelumbiums when there are indications of spring weather, that is, when the early-flowering shrubs, such as the Forsythia, Japan Quince, Wild Cherry, etc., put forth their blossoms, when the grass is not only green, but ready for the mower, and the Dandelions are gleaming on the lawn. These are not harbingers of spring, but declare clearly that spring is here.

In some sections of the country where Nelumbiums are established they have penetrated into deep soil and some are in deep water. These are slow in starting into growth in spring, for it takes a long time for a large body of water to become warmed by the rays of the sun, and consequently the tubers remain in a dormant state for a longer time. Artificial ponds should, therefore, not be too deep, but deep enough to protect the tubers from freezing. Two feet of ice above them will do no injury so long as the tubers themselves are not frozen. In spring the water may be drawn off and a few inches will suffice. When planting or transplanting in spring, dormant tubers, or those already active, are sure to grow under the weather conditions referred to, but if planted while it is cold—and a cold spell often follows the few first warm days of spring—when the tubers have already become excited or started to grow, the check to their growth consequent on the chill will, undoubtedly, prove fatal. In planting Nelumbiums it is well to make haste slowly.

There are numerous varieties of Nelumbiums. The well-known Egyptian, so called; the Chinese; the Japanese of various hues and shades of color, from pure white to deep carmine, single and double; and the native American Lotus, Nelumbo lutea. The latter is not as vigorous in this section as the others and is consequently more difficult to establish. The best treatment is to start the tubers indoors in seed-pans or pots, or even in an old pail, and when well established to transplant in permanent quarters. Seed may also be started and grown on in pots and afterward transferred to tubs or planted in ponds, but the seedlings will not flower the first season. Among those of recent introduction a few deserve to be better known and more generally grown. Album striatum is robust, vigorous and free-flowering. The flowers are large, pure white, flaked and margined with crimson-carmine; sometimes this coloring is slight, and at a short distance the flowers appear pure white. They have exquisite fragrance. Kermesina is not so robust, but is vigorous and free-flowering and equals N. speciosa. The flower is a delicate shade of carmine-rose. N. rosea is also of good constitution. The flower is bold and massive and the deepest rose-color of any in cultivation.

Hardy Nymphæas may be planted two or three weeks ahead of Nelumbiums and should receive attention first. Yet these may be planted any time during summer, and as late as the first of September in warm sections. The season for flowers will be short, however, if there are any flowers at all, but an advantage is gained for the following season. The great improvement of varieties and the addition of new ones make them highly valuable as hardy decorative plants. Only a few years ago a hardy pink variety was a valuable novelty and limited in distribution; but now this class embraces all the deep rich reds of the tropical varieties, and in some instances they are unsurpassed. The blending of colors in these charming flowers baffles description. Among those within reach of most cultivators and deserving of mention are Nymphæa Marliacea carnea, N. Marliacea rosea, N. Laydekeri rosea, N. Laydekeri purpurea and N. lilacea. Among those that are yet scarce, and consequently high in price, are such superb varieties as N. Robinsoni, N. lucida, N. flammea, N. ignea and N. fulgens. These are fiery crimson, orange-scarlet and purplish maroon, with intermediate shades unsurpassed by any other class of hardy plants.

Riverton, N. J. *W. Tricker.*

Soils and Potting.

AT a recent meeting of the Massachusetts Horticultural Society, Mr. T. D. Hatfield read a paper on the above title, and we quote from an abstract of it which appeared in the *Evening Transcript*, of Boston:

Gardeners seldom agree entirely about the proper soil for any crop. Soil may be heavy or light, the land high or low and with much variation of exposure, and we often wonder at our neighbor's success under conditions where we should consider failure certain. An acquaintance of mine, a gardener at Cape Ann, told me that the only potting soil he could find was turf from what had once been a salt marsh. After it had been broken up and exposed to frost and air he found he could grow almost anything in it.

We gardeners believe in "leaving well enough alone," and there are methods which we continue because it is the custom, though we cannot explain why. We read in old books, "one-third turfy loam, one-third leaf-soil and one-third sand," or it may be fourths, including rotted manure, or four-fifths, with peat added. This accurate measuring, however, is slow, and but few such mixtures of soil are in use to-day by men who have left off obeying the rule of thumb and have taken lessons in the school of experience. Leaf-soil, one of the best ingredients in any compost, is seldom used except in private gardens. Well-rotted manure is a good substitute. However, the soil should be light for potted plants and there is less danger from overwatering with the hose. Rose-growers always find means of meeting the wants of the soil. They may add clay, but can generally do without it.

With Azaleas it used to be considered necessary to use English peat, and ninety per cent. of these plants are still so grown in England. But look at the Azaleas grown by Mr. Sander, gardener to Professor Sargent, of Brookline, and you will see that Azaleas can be grown in soil almost wholly lacking peat.

There are other considerations almost as important as the soil and its consistency. For Gloxinias I tried various kinds of soil to little advantage. With these plants much depends on caring for the tubers during the so-called resting season, though they are never absolutely at rest, and it is a mistake to remove them and store in dry sand. They should never become thoroughly dry, for living shoots will always be found which require some nourishment. Start with sound, healthy roots, withholding water until some leaf-growth is made, and keep them near the light, and then Gloxinias will succeed in almost any soil.

I have but one compost heap. Good turfy loam is not plentiful, and some of us have found how to get along without it. Old Country Carnation growers are extremely carefully in mixing their potting soil, but the American grower prepares his in the field without a foot of turf. The best method is to cultivate the area for stripping, growing thereon a crop of clover with no other object beyond turning the best of what is put into the soil as manure into plant-food of the kind which the Carnation most needs. The American grower raises the better Carnations, though it is true he has better light during winter-time, has made a specialty of the work, and has originated a new type of the plant. This shows that the importance of a prescribed composition for soil is overestimated. I have grown Chrysanthemums in soil from the common compost heap which were just as good as those grown in special soil.

In the spring there is generally turf trimming to be done, and I used to get enough in this way for a season's use; but

now if I get a half-dozen cartloads of turf I mix it with two loads of the best manure—sheep-manure is preferred, as it is richer, so that less is required. This I put in layers alternately with pure ground bone; fermentation starts and the soil is heated to 120 degrees, Fahrenheit, which will kill all insect-life and weed seeds and make the bone meal available as plant-food. Bone meal should be worked into the compost long before it is needed, as it is not fit for use until fermentation has subsided. It should never be used as a top-dressing. I have said that light soil is best for potted plants, but a man may get along with heavy soil if he understands its management. Injudicious watering will lessen the value of the best compost, and lack of air and of proper heat and moisture would ruin the best plants.

In potting plants clean pots are a necessity. If new, expose them to a rainstorm, or else fill with moist earth and leave for a day or two to deodorize them. This earth should not be used again. Next in importance is good drainage. The best material is crocks of broken pots. Coal ashes, though excellent for many plants, is bad for others. Plants which do the greater part of their growing in winter-time, as well as those which remain a long time without repotting, require most care. All potting should be done firmly and for the most part by hand. Plants which grow quickly, Geraniums, Heliotropes, Coleus and Fuchsias—what gardeners call soft-wooded plants—need less care. Amateurs often put out their window-plants for a summer's growth, and it is pleasant to see how luxuriantly they grow with unrestricted root area, fresh air and sunshine. But in winter again they must be pruned and curtailed in root-room. Geraniums and almost all window-plants stand this rough treatment. I, myself, should prefer to dispense with old plants, having raised a lot of young stock in the mean time.

Amateurs often ask what fertilizers to use for potted plants, when all that is needed is better light and air, or more or less heat. The best of liquid manures for potted plants, to continue the productiveness of flowers or fruits after the natural resources of the soil have been exhausted, is the dregs from the barnyard. It is well to start with one-eighth strength and increase as experience dictates. Colorado sheep-manure may be used at the rate of a peck to fifty gallons of water. Sulphate of ammonia and nitrate of soda, at the rate of one pound to fifty gallons, furnish nitrogen in a form easily assimilated, and their action is quick of benefit as well as of injury. These should only be given in such quantities as the plant can digest. Even if a surplus did no injury to the plants it soon leaches away and is lost. Liquid manures should be used only on healthy plants, and free drainage must be secured at all hazards.

Azalea Indica.

MOST of the varieties of Indian Azaleas which are generally brought into flower for Easter are now beginning to show their colors. It is usually somewhat difficult to keep them back until this time even in the coolest possible quarters, but this year they seem to be developing so as to be at their best at the right time. The weather, which until recently has been somewhat dull and sunless, has doubtless had a retarding influence. The most forward of all the varieties is the pure white Deutsche Perle, which is generally the first to flower. The buds on A. Indica alba are also well forward, and while this old favorite is less popular than the newer sorts, it has not yet been excelled for freedom of growth and flower, and we still value it as a useful variety for cutting. Apollo is another good white variety of the older sorts, and its flowers are among the largest. Louisa Pynaert is also white, and unrivaled in purity and substance, but somewhat shy in flowering. Imbricata, a white variety flaked with rose, on the contrary, is more inclined to make flowers than growth. Other good varieties, old and new, are A. Borsig, Ami du Cœur, Bernhard Andre and its white variety, alba, the double-flowered Camellie, Candidissima, Flambeau, Madame Camille Van Langenhove, Madame Iris Lefebvre, Madame Van Houtte, Pharilde Mathilde, President Oswald De Kerchove, Princess Alice, Theodore Riemers, Stella and Vervaeneana. These varieties are very numerous, and these are only a few of the best of those with which I have familiar acquaintance.

One of the points of cultivation which should be attended to now is the pinching out of all young growths as they appear alongside the flower-buds. If these are allowed to grow, the flowers will be quite worthless. They appear on most plants at this time, no matter how carefully they may have been cultivated. They are often induced by feeding after the buds are set. This is a mistake and should be avoided, though frequent applications of weak liquid-manure may be given while the plants are in active growth; the inducement of soft growth must be guarded against. Syringing is important in maintaining the vigor of the foliage, and it also helps to keep in check such troublesome insects as thrips and red spider.

We find that planting out after the beginning of June is the simplest and most convenient method of summer cultivation, unless for large plants. A liberal supply of leaf-mold should be worked into the soil where they are to be placed. Watering is, of course, necessary during dry weather, but it is easy to maintain an even moisture about the roots of the plants under this treatment as compared with the former practice of plunging the pots. We like to see the buds well set before lifting in fall, but it is better to lift a little early rather than incur danger from freezing.

Tarrytown, N. Y. *William Scott.*

Correspondence.

Is the White Pine Doomed?

To the Editor of Garden and Forest:

Sir,—I have read with interest the very ingenious and highly philosophical, yet rather unnecessarily forced and, I believe, erroneous explanation which Professor Corbett advances in your issue of March 24th for the difficulty which the White Pine seems to experience in reproducing itself, namely, because, with the Coniferæ in general, the Pines are "less highly organized" morphologically, they are "less virile than many of their competitors," and "more congenial conditions for growth and development must be provided for them than for other species with which they now have to contend." And finally he states that "the White Pine requires extra care to induce it to perpetuate itself." These statements might be misconstrued into meaning that the Pines are more fastidious than other species regarding conditions of successful reproduction. This would be a grave mistake, for, on the contrary, the Pines, of all trees, are among the most frugal, able to exist, and even thrive, in the poorest and driest soils and climates, where no other trees will. Is it not the tree of trees for sand dunes? Does not Pinus rigida maintain itself in the most forbidding gravels and sands of the Jersey plain? Is not P. Virginiana the very emblem of frugality? Does not P. Tæda immediately take possession of the abandoned southern fields, keeping out all competitors and wrestling even in the swamp for supremacy? Do not P. edulis and P. ponderosa occupy the driest slopes and exposures of the Rockies, and does not the latter range from arid southern Arizona to humid British Columbia, showing a most remarkable adaptability which few species share? Is not P. Banksiana the most frugal inhabitant of the northern Pine lands, and does not P. resinosa thrive in the swamps of Minnesota as readily as in the dry gravels, showing hardly any difference in the rate of growth? And the White Pine is no exception to the rule—nay, if anything, it is even more adaptive in certain directions.

Within its climatic range and even beyond its natural limits of distribution it occupies, or may be made to occupy, the greatest variety of soils, and may be propagated with the greatest ease. That there is no more difficulty than with most other species in regard to its spontaneous reproduction, if the chances are even, may be seen in the hill country of Massachusetts, as well as in the true Pine country of Wisconsin and Minnesota. Wherever an opening large enough is made young seedlings quickly appear and find no difficulty in maintaining themselves against broad-leaved competitors, if only the fire did not come to the aid of the latter. For these have one advantage in their constitution over the Pine and one only, namely, that they can sprout from the burnt stump. As to their seeds, contrary to Mr. Corbett's supposition, it is well known that those of the Pine retain their germinative power much longer than many and as long as most broad-leaved species. To be sure, the observed deficiency in the recuperation of the White Pine growths is, as Professor Corbett suggests, due to unfavorable conditions, but these are entirely extraneous and not inherent in the constitution of the Pine or its seed. Any other species treated in the same way would and does react similarly. Even the White Oak, most tenacious of life, can be almost exterminated, as some parts of Kentucky testify. Cull out all or most of the old White Oak in a mixed forest, leaving all other species to shade the ground and to compete in much larger number for the openings and you will soon miss all reproduction of that light-needing species. Thus, it is the culling of the Pine, reducing their number as compared with its competitors, and the leaving of these to

shade the ground, which reduces its chance for reproduction in spite of its considerable shade endurance.

Not special care, but merely giving an even chance for reproduction, is needed to recuperate the White Pine. To be sure, being our most useful timber, it deserves to be given even a better chance by removing such of its competitors as are less useful.

That the explanation of the rotation of forest crops lies mainly in the relative shade endurance of the species and the variation in light conditions produced either by the action of man or of nature, is too well established to require any other explanation.

Washington, D. C. *B. E. Fernow.*

The New Forest Reserves.

To the Editor of GARDEN AND FOREST:

Sir,—Will you allow an Englishman, who has seen with his own eyes in many western states the frightful devastation of the most magnificent heritage of the American people, to congratulate you, as editor of GARDEN AND FOREST, on the success of your patriotic and wise efforts, continued for many years, to preserve some part of those unrivaled forests in a state of nature. I do not think that any act of the late Presidents will have such good and lasting results as this, if effectual measures are taken to protect the new reserves from fire, grazing and the reckless slaughter of game, which has been so detrimental to them.

I cannot help thinking that until a permanent staff of competent forest officers can be trained and appointed you will find that detachments of the regular army under selected officers will prove the most effective and honest guardians of the reserves, and though the areas defined are small enough in comparison with the vast areas which are already either wholly or partially ruined, yet the step just taken is one which goes beyond what could have been expected at the present moment. There still remain, however, some regions in which similar reserves seem to be almost as much wanted. Among them I might mention a district in north-western Colorado, and another in western North Carolina. It may be too late, but, as an illustration of what we are reduced to here, I may say that our Government is at last obliged to purchase a large tract of land on Salisbury Plain simply because there was no area of open land in southern England large enough for military manœuvres.

Colesborne, England. *H. T. Elwes.*

Exhibitions.

Spring Flower Show at Boston.

ALL the visitors at the exhibition of the Massachusetts Horticultural Society last week agreed that this was, upon the whole, rather better than any spring show yet held by the society, one reason being that such fine weather prevailed at the time of opening that exhibitors had no fear that their plants would be injured by the cold, and therefore they took the best they had. The classes were usually well filled, although there were no competitors for the group of Orchids covering forty square feet. It is rather odd that in the schedule of prizes a date should have been selected for the largest premium on these plants just between the season of their winter and summer bloom. The great masses of Cyclamens, Cinerarias and the varied exhibition of forced bulbs were the leading features of the show as a popular spectacle. The shrubs in flower were also good, although the Indian Azaleas were not up to the highest standard of excellence. There were a few other hard-wooded plants in flower, good Acacias, Epacris, etc., but none of great interest, except from a cultural point of view. There never was so fine a competition of Carnations at a spring show, and the hundred blooms of no less than six varieties, with their foliage, for which William Nicholson took first prize, were exceptionally good, and so were the vases of Ferdinand Mangold, William Scott, Daybreak, Hector and Eldorado, with which Mr. Nicholson took first prize for the best five flowers of a crimson, a dark pink, a light pink, a scarlet and a yellow variety. A new white flower called Freedom, shown by Peter Fisher, was a fine flower, and so was the Nivea of H. A. Cook. The Cyclamens were far in advance of anything previously seen in Boston, and by the great mass of visitors were considered the most interesting of the plant exhibits. There were some fifty plants in twelve-inch pots which took the first prize in various classes grown by John Barr, gardener to Mrs. B. P. Cheney. They were superb examples of culture. The bulbous plants were unusually numerous, conspicuous among which were the Trumpet Narcissus, Tulips and Jonquils of Elwell & Son. In the fine display of cut flowers of hybrid Roses one shown by David Nevins, called La Rosiere, was as perfect in its color (crimson) as Prince Camille de Rohan, but of better form and fragrance, and it adds another one to the very short list of common Roses which can be satisfactorily forced. Other conspicuous Roses were those of American Beauty, Meteor and Souvenir de President Carnot, for which F. R. Pierson received the first award, besides Bridesmaid and Bride, with which W. H. Elliott took the same rank. A finely flowered specimen of the Crimson Rambler Rose was in the large display of forced shrubs from the Bussey Institution, which included Daphne Cneorum, Lilacs, Kalmias and the like. Noteworthy specimen shrubs were John L. Gardner's fragrant Boronia megastigma and Dr. Weld's Acacia Drummondii, Boronia elatior and Erica Cavendishii. The cut flowers of Camellias from Mr. Joseph H. White were much admired, and they took the mind back to the time when a display of these flowers was indispensable to every spring exhibition. There were about a hundred flowers exhibited, each one with a spray of its own foliage. A cut spray of the double-flowering Japanese Cherry, exhibited by James Comley, was exceedingly beautiful, and received a silver medal from the society. It seemed to be a form of Prunus Pseudo-cerasus, but it differs from any now known in cultivation.

Besides the prize-takers already named, the chief awards for plants were made to Dr. C. G. Weld, the Bussey Institution, Jackson Dawson (for Crimson Rambler), John L. Gardner, James L. Little and J. W. Howard. There was an interesting display of fruits and vegetables, and Jackson Dawson received a special award for some well-fruited Strawberry-plants.

Notes.

Winter beets, turnips, cabbage, carrots and onions are gradually giving place to the new crops of these vegetables from the southern states, Bermuda and the West Indies. Eggplants are coming in considerable quantity from Florida and Cuba, and lettuce from the southern Atlantic coast states. Spinach and kale, from Virginia, are plentiful and cheap. The best out-of-door tomatoes come from Florida, those from Key West being rather inferior in quality. Heavy stalks of Colossal asparagus in full-sized bunches, from North and South Carolina, sell for fifty cents. No cucumbers have come from Florida since the heavy frost there in January until now, when a few crates are being forwarded. Celery finds ready sale, and a choice is afforded in the varying kinds from Florida, California and the interior of this state. Peas and string-beans, some of choice and others of indifferent quality, still come from Florida, the best being hurried northward by express, while the cheaper grades come by freight. One of the most costly field vegetables now in market is Bermuda potatoes; large ones of the new crop cost $9.00 a barrel at wholesale.

Mr. Robert Simpson, writing to *The American Florist*, says that it is a mistake to feed Roses under glass or other plants of this class abundantly in autumn or early winter, while the plants are small and soft and while the soil is still rich in plant-food, with comparatively few roots to use it. But in the spring, when the soil is full of roots, the sun powerful and the growth rapid, unless nutriment is furnished just as fast as it can be consumed by the plants, small shoots and smaller flowers will be the result. Of course, we cannot take fresh manure from the stable into the greenhouse and use it as a mulch. It should have been heaped up last summer, turned over once or twice in the autumn, and stored before cold weather in a shed or other dry place where it can be reached and handled at any time. In this season of growth the surface of the benches should be sprinkled over with a dusting of finely ground bone or wood ashes, or, better still, with a mixture of both, and this should be covered with a mulch an inch thick of the well-rotted manure and soil mixed in equal quantities. Liquid manure may be omitted for a week after the mulch is spread, otherwise it should be attended to faithfully and regularly, giving it frequently in a very diluted form.

A serious cane-blight of the Currant, which has been attributed to poor soil and hard winters, is really the work of a fungus which is described in Bulletin 125 of the Cornell University Station. The first effect of the disease is seen in wilted foliage and premature coloring of the fruits. Then the leaves dry up and fall away, the berries shrivel and fall, and the bare canes die rapidly. Sometimes the plants die before the leaves unfold, so that unopened buds are seen on the dead branches, and in the worst cases the roots die with the canes. Without giving any detailed description of this fungus, to which allusion has already been made in these

pages, it is enough to say that the mycelium having once gained entrance to a plant may live there for a long time and be transmitted with the cuttings. Cuttings should therefore be taken from plants known to be free from disease, and it is not safe to take them from absolutely healthy plants in the neighborhood of diseased ones. They ought to be obtained from localities where the disease is not present. The best remedy is the removal of the entire plant as soon as the disease begins to be manifest. It should then be burned, because the spores and conidia may be produced on dead plants, and the trouble in this way communicated to the living bushes.

Adonis vernalis is well known as a hardy plant both for the garden border and for rock-work, and if left without frequent transplanting often it soon becomes established and its large yellow corolla, seen above the deeply cut leaves, makes a beautiful show in early spring. *The Gardeners' Magazine* gives an illustration of another species of this genus, Adonis Amurensis, which certainly looks as if it would be a worthy companion of the better-known plant. The picture was taken from a specimen in the rock-garden at Kew, where the plant occupies a shaded nook and was blooming at its best about the middle of February. Mr. Watson spoke of it about a year ago in this journal as flowering for the first time in Europe although it has long been known in the east, and no less than twenty-one colored figures, representing distinct garden varieties of it, are published in one Japanese work. There are double and single flowered varieties, some yellow, others orange, others bright red. As they would probably be hardy in this country they might make useful additions to our early-flowering herbaceous plants. This species was discovered in the Amur Provinces of Russia, and it has also been found in the north of Nippon.

The Rural New-Yorker, in reply to the inquiry whether Strawberries should be cultivated in the spring before they fruit, received answers which show that practice in this regard varies widely among experts. Some growers say that one acre when cultivated in the spring will yield as much as two neglected ones, while others feel that it is the wisest practice to leave the mulch between the rows and never touch the ground with the hoe until after the fruit has been gathered. The facts seem to be that during the spring and summer after the plants have been transplanted the roots grow downward to get away from the heated surface to find water. When cool autumn weather comes, fine feeding roots take possession of the surface of the soil and these are the ones upon which the spring growth of the plant depends and which mature the fruit. Of course, hoeing the ground in the spring will kill these roots and reduce the fruiting power of the plants. But after the fruiting season the old roots are useless and the plant begins to send out new ones which again reach downward, and this is the time for cultivating on the surface. In the cool of autumn a second crop of roots takes possession of the surface soil, and if the mulch is left on the ground the next spring these will be the most valuable working roots. Perhaps the men who succeed with spring cultivation are those who keep up rather deep cultivation late in the fall which compels the roots to run deep. In this case the hoe in the spring will find no roots to injure and cultivation does good. Of course, nothing but the surface is hoed, and after the hoeing is done a mulch is laid over the surface and new roots will quickly run through this upper layer to provide food for the growing crop.

Among specialties in the fruit-stores this week is guava-paste from Venezuela, a dry marmalade of agreeable flavor with appetizing qualities, and easily kept and handled, as it comes in square bars wrapped in paper. Packages of one pound cost twenty-five cents, and five pounds are offered for seventy-five cents. Sapodillos, in edible condition, cost sixty cents a dozen. The first mangoes of the season have arrived in a private consignment from the West Indies, and this fruit will soon be regularly in the trade. Large irregular-shaped yams bring twenty-five cents for three pounds. Preserved bananas, a novelty in this market, are seen in a down-town fruit-store. They are entire, peeled, with the flavor of the fresh fruit, brown in color, somewhat toughened in evaporation, and are packed in layers in boxes, to be eaten out of hand. They cost twenty cents a pound. Florida Navel oranges of large size sell for fifty to seventy-five cents a dozen, and the kind known as Jaffa Seedless, with only occasional seeds, and also from Florida, bring an equal price. Grape-fruit from the same state commands $5.00 a dozen, or fifty cents apiece for large selected specimens. The quantity of Blood oranges seen this season is uncommonly large; this showy fruit comes from Messina and from California. That from the western coast costs fifty to sixty cents a dozen for the best, or a third more than the Italian fruit; it is more highly colored than that from Europe, has a more pronounced flavor, and is somewhat more acid than the seedling oranges from California. Almeria grapes, carried over in refrigerators, sell at thirty to fifty cents, and foreign hot-house grapes for $2.50 and $3.00 a pound with the end of the season in view, though hot-house grapes from Rhode Island will quickly follow the imported ones. California honey, at fifty cents for a quart jar, black currant jam and jelly and three-pound jars of preserved cherries, pineapples and peaches, carefully prepared by private establishments in this city, are among the wholesome delicacies seen in the stock of fruiterers.

Charles Eliot, of the firm of Olmsted, Olmsted & Eliot, died suddenly at his home in Brookline, Massachusetts, on Thursday, the 25th of March, in the thirty-eighth year of his age. He was the son of President Eliot, of Harvard University, from which he graduated in 1882, taking afterward a special horticultural course in the Bussey Institute to prepare himself for the profession of landscape-gardening. After traveling in Europe and studying the best examples of landscape-art in Great Britain and on the Continent he entered the office of Frederick Law Olmsted, with whose love of nature and artistic ideas he was in such full sympathy that he was soon entrusted with the design of works of considerable importance. At the conclusion of his studies he established himself in practice in Boston, where he achieved the success which a self-reliant, though unobtrusive, young man of original faculty and careful training had reason to expect. His greatest public service, however, at this period was the organization of the Board of Trustees for the preservation of beautiful and historic places in Massachusetts. If Mr. Eliot did not originate this idea, he was, at least, the most active promoter of the scheme which is bearing good fruit not only in Massachusetts, but has been adopted in other states, and promises to save from desecration and defacement many spots in different parts of the country which deserve protection for their beauty or patriotic association. Out of this idea grew the plan to save the natural charms of certain well-known places about Boston and unite them into a consistent system of public recreation-grounds, and Mr. Eliot took the lead in organizing the Metropolitan Park Board, of which he was made the landscape-architect. These magnificent pleasure-grounds and parkways, comprising thousands of acres of wooded hills and meadow-land, river stretches and sea views, were largely selected by him, and as they will be developed according to the plans he has outlined, they will make a monument on which an older artist might be content to rest his fame. Four years ago he became a member of the firm where he had received his training, and in a great variety of work he has proved himself one of the most accomplished of designers. He had an intense appreciation of nature, but he always kept up his student habits, examining the outdoor world critically, and reasoning upon what he saw to establish principles which could be applied in practice. He realized the relative importance of natural landscape and of architectural work; he planned with a broad spirit so that he could adapt his rules to buildings and gardens without any danger of over-elaboration on the one side or an affectation of naturalness on the other. He liked system, symmetry and dignity where artificial construction was needed, but no one appreciated better than he what was picturesque in nature, or had a greater reverence for her broad scenic aspects. Mr. Eliot was not only a man of creative faculty, he was, as the readers of this journal know, able to give reasons for the faith that was in him. He had the ability to make a consistent and logical statement of his views and to express them clearly; but, beyond this, he had the gift of expression in a singularly effective style, so that some of his reports are as useful as his designs. The Metropolitan Park Report of 1893, and others which have followed, together with his writings for the press, embody such an amount of sound doctrine, effectively stated, that one regrets that he has not left more of this kind of work behind him. In short, he was well equipped in every direction, and it is no exaggeration to say that his untimely death is an almost irreparable loss to rural art in America, a loss that will be felt more keenly since it follows so closely after that of Calvert Vaux, Henry Sargent Codman and Philip Codman.

Mr. Eliot was a man of the most delicate and refined nature. He was reserved as scholars are, but his elevation of mind and dignity of character were apparent to all, and he had a gentleness of manner and thorough consideration for the feelings of others which won the affectionate regard of all who were familiarly associated with him.